REMARKS

Claims 1-33 are pending in the subject application, of which claims 16, 17, 32 and 33 have been objected to as reciting allowable subject matter but being dependent on a rejected claim. Applicant appreciates the indication of allowable subject matter and respectfully traverses the rejections in the Office Action for the reasons below.[1]

Rejection of Claims 1, 2, 5, 6, 18, 19, 22 & 23 Under 35 U.S.C. § 103(a)

Applicant traverses the rejection of claims 1, 2, 5, 6, 18, 19, 22 & 23 under 35 U.S.C. § 103(a) as allegedly not being patentable over U.S. Patent No. 6,321,197 to *Kushner et al.* ("*Kushner*") in view of U.S. Patent No. 5,828,997 to *Durlach et al.* ("*Durlach*"), and U.S. Patent No. 6,629,070 to *Nagasaki*.

The Applied Patents Fail to Teach or Suggest All the Features Recited in Claim 1

The applied patents cannot support a rejection of claim 1 under Section 103(a) because they do not teach or suggest all the recited features. (*See* M.P.E.P. § 2143.) The Examiner concedes that *Kushner* and *Durlach* do not disclose a "random parameter extraction unit for extracting random parameters indicating the randomness of frames from the frames input from the whitening unit ... based on a determination of the number of runs in said frame," as recited in claim 1.

In addition, because *Kushner* and *Durlach* do not disclose or suggest the claimed "random parameter extraction unit," these documents also cannot disclose "a frame state determination unit for classifying the frames into voice frames and noise frames *based on the*

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[1] The Final Office Action contains statements characterizing the claims and related art. Regardless of whether any such statements are specifically addressed herein, Applicant's silence as to these characterizations should not be construed as acceptance of them.

random parameters extracted by the random parameter extraction unit." (Emphasis added.)

Nagasaki does not overcome *Kushner's* and *Durlach's* deficiencies.

Nagasaki provides "a method for detecting a voice presence/absence state of a frame which is obtained by dividing a voice signal into frames, comprising steps of: dividing the frame into sub-frames; calculating a physical amount of the voice signal energy in each sub-frame; and determining whether the frame is in a voice presence state or a voice absence state on the basis of a degree of variation of energy among multiple adjoining pairs of the sub-frames." (*Nagasaki*, Abstract.)

Nagasaki states:

> The voice presence/absence state determining portion 133 determines whether or not the average value of the intensity of energy of the individual analysis regions of the current frame is larger than a predetermined threshold value. When the average value is larger than the threshold value, the voice presence/absence state determining portion 133 determines that the frame is a voice frame. When the average value is equal to or smaller than the threshold value, the voice presence/absence state determining portion 133 determines that the frame is not a voice frame.... When the voice presence/absence determination threshold value is 1000 and the values of the intensity of energy of the analysis regions E(1) to E(4) are E(1)=985, E(2)=1029, E(3)=988, and E(4)=1002, the average value of E(1) to E(4) is (985+1029+988+1002)/4= 1001>1000. Thus, the voice presence/absence state determining portion 133 determines that the frame is a voice frame. (*Nagasaki*, cols. 6:66-7:15.)

As described in the portion quoted above, *Nagaski* merely finds the *average* value of the intensity of energy in the analysis regions. By comparing the *average value* to a *threshold*, *Nagaski* determines whether a frame includes a voice.

The Examiner asserts that *Nagasaki's* voice presence/absence state determining portion 133 corresponds to the claimed "random parameter extraction unit." In addition, the Examiner asserts that the intensity of energy at each analysis region E(t) corresponds to the claimed "runs in said frame." (Office Action, p. 5.) Applicant disagrees.

During examination of an application, the Examiner should interpret claim terms to have the broadest reasonable meaning that would be given to them by one of ordinary skill in the art in the context of the specification. (*See* M.P.E.P. § 2111.) Limitations described in the specification are not imported into the claims. (*See* M.P.E.P. § 2111.01.) However, where an Applicant provides an explicit definition for a term, that definition will control interpretation of the term as it is used in the claim. (*Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999); M.P.E.P. § 2111.01.)

In this application, the specification defines the term "run" as follows:

> The term "run" means a sub-sequence consisting of consecutive identical elements in a sequence, i.e. the length of a signal with the same characteristics. For example, a sequence of TH H HTH HT T T has 5 runs, a sequence S S S S S S S S S S R R R R R R R R R R has 2 runs, and a sequence of S R S R SR S R S R S R S R S R S R S R has 20 runs. Determining the randomness of a sequence by using the number of runs as a test statistic is called "run test." (*See* Published Specification, p. 2, ¶ 0037, emphasis added.)

Given the definition above, *Nagaski* does not disclose or suggest "a determination of the number of *runs* in said frame," as recited in claim 1. (Emphasis added.) That is, the document says nothing with regard to determining the number of "consecutive identical elements" in the intensity of energy of the individual analysis regions. *Nagasaki* merely determines *an average* of four consecutive analysis regions. Accordingly, *Nagasaki* does not disclose or suggest "a determination of the number of runs." *Nagasaki*, therefore, fails to disclose or suggest a "random parameter extraction unit for extracting a random parameter for a frame input from the whitening unit based on a determination of the number of runs in said frame."

Furthermore, *Nagasaki* does not disclose "extracting random parameters." The Examiner asserts that "determination of energy is random since it is not known whether the

frame is voice or noise." On the contrary, (as argued previously,) the mere fact that speech is "not known" does not make it random, at least because speech follows set patterns used to communicate information. As such, speech is predictable to some degree and, thus, not random.

Moreover, even if energy of voice activity were random, which Applicant does not concede, *Nagasaki* would still not disclose or suggest the "extract[ing] a random parameter" because the patent does not disclose "extract[ing] a random parameter … *based on a determination of the number of runs*." (Emphasis added.)

Because *Kushner*, *Durlach* and *Nagasaki* fail to disclose the claimed "random parameter extraction unit," these documents, taken individually or in combination, cannot support a *prima facie* case for rejection of claim 1 under 35 U.S.C. § 103(a).

The Applied Patents Cannot Be Combined As Asserted in the Office Action

To support a rejection under 35 U.S.C. § 103(a) the Examiner must also establish that "one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, *each element merely performs the same function as it does separately*" and that "one of ordinary skill in the art would have recognized that the results of the combination were predictable." (*See* M.P.E.P. § 2143.) The applied documents fail in these regards.

The function of *Nagasaki*'s voice presence/absence state determining portion 133 is to determine whether a voice is present in a signal. (*Nagasaki*, Col. 6:54-56; Col. 7:14-15.) But *Kushner* is already relied on for disclosing a speech/noise classifier which determines whether a voice is present in a signal. A system combining *Nagasaki's* voice

presence/absence state determining portion 133 and *Kushner's* speech/noise classifier would be redundant and inoperative.

Moreover, the purported combination including voice presence/absence state determining portion 133 would require it to be modified to function as the claimed "random parameter extraction unit" which receives "input(s) from [a] whitening unit" and provides "random parameters" to a "frame state determination unit." But neither *Nagasaki* nor the other documents disclose the claimed relationship between the "random parameter extraction unit" and the "frame state determination unit" and the "voice region detection unit," recited in claim 1. Creating this claimed relationship would require that the elements in *Kushner*, *Durlach* and *Nagasaki* be repurposed to have different functions than disclosed. Accordingly, the purported combination of *Nagasaki* with *Kushner* and *Durlach* is improper. And, for the same reasons, the purported combination would not have a predictable result. (*KSR International Co. v. Teleflex Inc.*, No. 04-1350 (U.S., April 30, 2007), 82 USPQ2d 1385, 1396 (2007); M.P.E.P. 2141.) Thus, the Examiner's combination is improper for this reason also.

Furthermore, as argued previously, *Kushner* and *Durlach* cannot be properly combined. *Kushner* is directed to speech recognition in a communication device 100, such as a cellular telephone, a portable telephone handset, a two-way radio, a data interface for a computer or personal organizer. (*Kushner*, col. 3:3-11.) Communication device 100 includes only a single microphone 133. (*Id.*) In contrast, *Durlach* provides a system including a diversified microphone system to obtain information on the direction of a sound source. (*Durlach*, cols. 1:65-2:3.) In particular, *Durlach* discloses determining directional information used to include or exclude time-varying signals St(t)-Sn(t) produced by several microphones 50a-50n. (*Durlach*, cols. 2: 32-36, 5:54-6:16.)

There would be no reason to modify *Kushner's* handheld device, in which a user speaks directly into the microphone, to add a second microphone for determining the direction of source, as described by *Durlach*. Alternatively, modifying *Durlach* to have less than two microphones would render *Durlach* inoperative for its stated purpose of determining a direction of a target source, which requires at least two microphones. (*Durlach*, cols. 2: 32-36, 5:54-6:16.) Indeed, making the purported combination with *Kushner* would repurpose all the components disclosed by *Durlach*. As such, these components would not perform the same function as it did separately. Moreover, the components could not have been combined using known methods and one of ordinary skill in the art would not have recognized the result of the combination predictable. Accordingly, it cannot be properly combined with *Kushner* for at least this reason.

It appears that the Examiner's only reason for selecting and repurposing the various elements of *Durlach* and *Nagasaki* for combination with *Kushner* is based on hindsight reconstruction using knowledge obtained from the Applicant's specification. (See, e.g., FIG. 2.) Such reliance on hindsight is improper and cannot support a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

Allowability of Claims 1, 1, 2, 5, 6, 18, 19, 22 & 23

For all the reasons set forth above, the applied references cannot support a rejection of claim 1 under 35 U.S.C. § 103(a). As such, Applicant requests that the rejection of claim 1 be withdrawn and the claim allowed.

Independent claim 18, although of different scope than claim 1, recites features similar to those recited in claim 1. Accordingly, claim 18 is allowable over the applied references for the same reasons set forth above with regard to claim 1.

Claims 2, 5, 6, 19, 22 and 23 depend from independent claims 1 and 18. Accordingly, claims 2, 5, 6, 19, 22 and 23 are allowable over the applied references at least due to their corresponding dependence from claims 1 and 18.

Rejection of Claims 3, 4, 7-15, 21 & 24-31 Under 35 U.S.C. § 103(a)

Claims 3, 4, 7-15, 21 & 24-31 under 35 U.S.C. 103(a) based on various combinations of *Kushner*, *Durlach*, and *Nagasaki* with U.S. Patent No. 6,182,035 to *Mekuria*, U.S. Patent No. 5,572,623 to *Pastor*, U.S. Patent No. 7,065,485 to *Chong-White et al.*, and "An Adaptive KLT Approach for Speech Enhancement" by *Rezayee et al.*

Claims 3, 4, 7-15, 21 & 24-31 depend from independent claims 1 and 18 and, therefore include all the limitations of the corresponding independent claims from which they depend. Applicant respectfully submits that none of *Mekuria, Pastor, Chong-White et al.* and *Rezayee et al.* disclose or suggest the above noted features missing from *Kushner*, *Durlach* and *Nagasaki*, and the Examiner does not assert that these references disclose or suggest such features.

Accordingly, claims 3, 4, 7-15, 21 & 24-31 should be allowable over the applied references, whether taken alone or in combination, for the reasons already set forth above with regard to claims 1 and 18.

Conclusion

Based on the reasons as set forth above, Applicant respectfully requests allowance of all pending claims.

If additional fees are required for any reason, please charge Deposit Account No. 02-4800 the necessary amount.

Respectfully submitted,

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